Listing of Claims:

What is claimed is:

1. (previously presented) Apparatus for processing an equalizer output signal formed by transmitting an alternate mark inversion input signal over a channel and passing the transmitted signal through an adaptive equalizer, comprising:

a correlator circuit block that detects an incorrect convergence of the adaptive equalizer by summing a plurality of consecutive alternate mark inversion symbols and outputs a correlator output signal; and

a corrector filter that receives the equalizer output signal and the correlator output signal, and applies a correction to the equalizer output signal based on the correlator output signal, to form a corrected signal that is substantially a time delayed copy of the input signal.

2. (currently amended) ~~The apparatus of claim 1,~~ Apparatus for processing an equalizer output signal formed by transmitting an alternate mark inversion input signal over a channel and passing the transmitted signal through an adaptive equalizer, comprising:

a correlator circuit block that detects an incorrect convergence of the adaptive equalizer by summing a plurality of consecutive alternate mark inversion symbols and outputs a correlator output signal;

a corrector filter that receives the equalizer output signal and the correlator output signal, and applies a correction to the equalizer output signal based on the correlator output signal, to form a corrected signal that is substantially a time delayed copy of the input signal, and

~~wherein the correlator circuit block further comprises~~ means for calculating an estimate of an autocorrelation function of the equalizer output signal.

3. (previously presented) Apparatus for processing an equalizer output signal formed by transmitting an alternate mark inversion input signal over a channel and passing the transmitted signal through an adaptive equalizer, comprising:

a correlator circuit block, with means for calculating an estimate of an autocorrelation function of the equalizer output signal, that detects an incorrect convergence of the adaptive equalizer and outputs a correlator output signal; and

a corrector filter that receives the equalizer output signal and the correlator output signal, and applies a correction to the equalizer output signal based on the correlator output signal, to form a corrected signal that is substantially a time delayed copy of the input signal

wherein the autocorrelation function calculating means performs the calculation according to the equation:

$$R[m] = \sum_{i=0}^{S} y[i]y[i-m]$$

where R is the estimate of the autocorrelation function, m is an integer which varies from 1 to a maximum expected length for an impulse response function of the channel, y is the equalizer output signal, i is an index, and S is a number of iterations used for the calculation.

4. (original) The apparatus of claim 3, wherein the corrector filter applies a correction based on a maximum value of R calculated by the autocorrelation function calculating means.

5. (original) The apparatus of claim 3, wherein the corrector filter applies a correction based on the equation:

$$q[n] = y[n] - y[n-1] + q[n-M]$$

where n is an index, $q[n]$ is the corrected signal, $y[n]$ is the equalizer output signal, and M is the value of m for which R has a maximum absolute value when calculated by the autocorrelation function calculating means.

6. (original) The apparatus of claim 2, wherein the autocorrelation function calculating means comprises:

a plurality of latches for providing a plurality of delayed equalizer output signals;

a plurality of multipliers, each multiplier multiplying the equalizer output signal with a respective one of the delayed equalizer output signals to form a product signal;

a plurality of accumulators, each accumulating values of a respective product signal to form a respective sum; and

means for identifying which of the accumulators contains a maximum one of the sums.

7. (original) The apparatus of claim 6, wherein the plurality of latches are D-type flip-flops.

8. (original) The apparatus of claim 6, wherein at least one of the accumulators is a register.

9. (original) The apparatus of claim 1, wherein the corrector filter includes an infinite impulse response filter.

10. (original) The apparatus of claim 9, wherein the corrector filter includes:

a first latch for delaying the equalizer output signal and outputting a delayed signal;

an subtractor for subtracting the delayed signal from the equalizer output signal and providing a difference signal;

a plurality of additional latches, each delaying the corrected signal by a respectively different number of clock cycles, each additional latch outputting a respective delayed corrected signal;

a multiplexer that selects one of the delayed corrected signals; and

an adder that adds the difference signal and the selected delayed corrected signal, to form the corrected signal.

11. (original) The apparatus of claim 10, wherein the first latch or one or more of the additional latches is a D-type flip-flop.

12. (original) The apparatus of claim 10, wherein the correlator output signal is provided to a select input of the multiplexer to select one of the delayed corrected signals.

13. (previously presented) A method for processing an equalizer output signal formed by transmitting an alternate mark inversion (AMI) input signal over a channel and passing the transmitted signal through a blind adaptive equalizer, the method comprising the steps of:

detecting an incorrect convergence of the blind adaptive equalizer, based on summing a plurality of consecutive alternate mark inversion symbols at the equalizer output signal; and

applying a correction to the equalizer output signal, to form a corrected signal that is substantially a time delayed copy of the AMI input signal.

14. (currently amended) ~~The method of claim 13 further comprising the step of~~ A method for processing an equalizer output signal formed by transmitting an alternate mark inversion (AMI) input signal over a channel and passing the transmitted signal through a blind adaptive equalizer, the method comprising the steps of:

detecting an incorrect convergence of the blind adaptive equalizer, based on summing a plurality of consecutive alternate mark inversion symbols at the equalizer output signal;

applying a correction to the equalizer output signal, to form a corrected signal that is substantially a time delayed copy of the AMI input signal; and

estimating an autocorrelation function of the equalizer output signal; wherein the correction is based on the estimated autocorrelation function of the equalizer output signal.

15. (previously presented) A method for processing an equalizer output signal formed by transmitting an alternate mark inversion (AMI) input signal over a channel and

passing the transmitted signal through a blind adaptive equalizer, the method comprising the steps of:

detecting an incorrect convergence of the blind adaptive equalizer, based on the equalizer output signal;

applying a correction to the equalizer output signal, to form a corrected signal that is substantially a time delayed copy of the AMI input signal; and

estimating an autocorrelation function of the equalizer output signal; wherein the correction is based on the estimated autocorrelation function of the equalizer output signal

wherein the step of estimating the autocorrelation function includes performing a calculation according to the equation:

$$R[m] = \sum_{i=0}^{S} y[i]y[i-m]$$

where R is the estimate of the autocorrelation function, m is an integer which varies from 1 to a maximum expected length for an impulse response function of the channel, y is the equalizer output signal, i is an index, and S is a number of iterations used for the calculation.

16. (original) The method of claim 15, wherein the correction is based on the maximum calculated value of R.

17. (original) The method of claim 15, wherein the correction is based on the equation:

$$q[n] = y[n] - y[n-1] + q[n-M]$$

where n is an index, $q[n]$ is the corrected signal, $y[n]$ is the equalizer output signal, and M is the value of m for which R has a maximum absolute value when calculated by the autocorrelation function calculating means.

18. (original) The method of claim 14, wherein the autocorrelation function calculating step includes:

providing a plurality of delayed equalizer output signals;

multiplying the equalizer output signal with respective ones of the delayed equalizer output signals to form respective product signals;

accumulating values of each respective product signal to form a respective sum; and

identifying a maximum one of the sums.

19. (original) The method of claim 13, wherein the correction applying step includes:

delaying the equalizer output signal and outputting a delayed signal;

subtracting the delayed signal from the equalizer output signal and providing a difference signal;

delaying the corrected signal by a plurality of respectively different numbers of clock cycles, and outputting a respective delayed corrected signals;

selecting one of the delayed corrected signals; and

adding the difference signal and the selected delayed corrected signal, to form the corrected signal.

20. (original) The method of claim 19, further comprising the step of estimating an autocorrelation function of the equalizer output signal, wherein the step of selecting said one of the delayed corrected signals includes selecting said signal based on the estimate of the autocorrelation function.